

be doubted, since it is a fact that a section of the gun before being quite severed, will tear itself loose with considerable violence, and will be found on separation to have been partially returned to its former calibre.

So far as practical trials have been conducted with the weapon, the Austrian Government have every reason to be satisfied with the Uchatius gun, which compares favourably with the Krupp steel cannon in the matter of accuracy and durability; while as regards its cost, it is far cheaper than any other rifled ordnance. A steel field-piece costs upwards of 100*l.*, even when not protected with rings, while the iron-steel weapon manufactured in this country, costs about 70*l.* sterling; the steel bronze cannon of Gen. von Uchatius, on the other hand, are made for 35*l.* apiece.

In construction, the Austrian gun is so similar to that of Herr Krupp, of Essen, that the latter claimed compensation for an infringement of his patent when the manufacture of the Uchatius gun was first commenced. The Essen works, our readers may know, supply not only Germany with steel breech-loaders, but have provided the present belligerents with all their modern artillery. Russia has still many brass cannon on hand, and Turkey a goodly number of Armstrongs, but both powers mainly depend upon their steel Krupps. These stood the German army in such good stead during the last war that their reputation is firmly established. They are of crucible steel, and the breech, instead of being upon a hinge, or in the form of a block, moves round in a D-shaped socket, the escape of gas being further prevented by rings of phosphor-copper.

The manner in which the ordnance of this country is constructed is sufficiently familiar to our readers. A tube of steel is encompassed by jackets of wrought-iron, and in this way the toughness of the latter is combined with the hardness of the former. All our guns, as we have said, load at the muzzle, while those of Russia, Germany, Austro-Hungary, and Turkey, are breech-loaders. Italy, in the case of the 100-ton guns with which she intends to arm her two stupendous turret-vessels, the *Duilio* and *Dandolo*, has adopted our method of construction, except that she employs smooth, instead of studded, projectiles. With the employment of a gas-check at the base of the shot to prevent windage and so secure the full force of the exploding charge, the use of studs in a shot appears to be unnecessary, a sufficient spin being imparted to the projectile by the soft metal of the gas-check before-named, which causes the shot to rotate after the manner of a Snider bullet. So satisfactory, indeed, were the Italian trials of these projectiles last year that it is by no means improbable that we, too, may give up the use of studded shot.

As to the comparative value of breech-loaders and muzzle-loaders, we shall not offer an opinion. No doubt a muzzle-loader is the stronger weapon, because its breech is solid, but our cousins, the Germans, urge very justly that since their guns do not burst, they are quite strong enough. Advocates of the muzzle-loading system argue again that their weapon is more simple in construction and for this reason is to be preferred; but on the other hand the sponging and loading of a gun is more easy to effect, if it opens at the breech. Indeed, in the case of very heavy guns located in a casemate or on board

ship, the Germans reproach us with the assertion that we must needs have recourse to all sorts of complicated and awkward machinery in loading, while in their case a simple pulley or crane is all that is necessary. Either, say they, we must expose our gunners through the open port when loading, or, as in the case of the *Thunderer*, rely blindly on hydraulic apparatus to work the guns for us. So stands the question; perhaps the present war will bring us a solution of it.

H. BADEN PRITCHARD

THE FORESTS OF PEGU

Preliminary Report on the Forest and other Vegetation of Pegu. By Sulpice Kurz, Curator of the Herbarium, and Librarian, Royal Botanical Gardens, Calcutta. (Calcutta: C. B. Lewis, 1875.)

INDIAN forest reports have of late years become as plentiful as the proverbial blackberries. The frequent appearance of them is a consequence that might be expected when we consider the wide range of country which comes under the supervision of the Forest Department of India. So far as bulk or quantity of printed matter is concerned, no one can say that these forests are not fairly represented in the Government papers which appear in the course of a year, but the quality of these reports is another question. They too often contain merely the dry details of work carried on during the year, and are interesting only to those immediately connected with the special department from which the reports emanate. Occasionally, however, a report is issued which in reality is something more, containing much valuable information on subjects connected with forest conservancy, and amongst such Mr. Kurz's may be classified. It is, in fact, rather a description of the vegetation of Pegu, to which are added appendices occupying quite two-thirds of the whole bulk of the volume. Taking the actual report itself, which, as indicated in the title, is of a preliminary character, the matter in which will be worked out in Mr. Kurz's forthcoming book, we find it divided into two parts, first, the "General Report," and second, the "Special Report." The general report is again divided into two sections—(A) A general aspect of the country, its geological and climatological features, in connection with the flora. (B) A botanical description of Pegu, with special reference to its forests. After a very brief topographical sketch of Pegu, Mr. Kurz considers the geological aspect of the country from a botanical point of view, which, unlike that of the true geologist, is not to consider the age of the rocks, &c., but simply their extent and quality, from which inferences may be drawn of the vegetation found growing upon each formation. The geology of Pegu is described as being very simple and uniform, the hills being composed solely of sandstone, skirted at their base by a strip of diluvium, "interrupted by a deeper or shallower alluvium wherever choughs come down from the hills, and succeeded by the vast alluvial plains, through which the Irrawaddy and Sittang flow." The laterite formation is described as being of the highest importance in the various floras of India. The term laterite, as generally used by foresters in Burmah, comprises several heterogeneous rocks and soils, all characterised by a more or less ferruginous appearance,

but really connected in no other way than that they are all permeated by hyperoxide of iron. "No other formation," Mr. Kurz writes, "except metamorphic and volcanic ones, can boast of such a variety of species, in spite of its apparent sterility, as laterite. It is this rock that affects vegetation so much that the great difference between the floras of Malacca, Borneo, Sumatra, &c., on the one hand, and that of Java on the other side, is produced. It is also this formation which allows so many Australian genera, like *Melaleuca*, *Baekea*, *Tristania*, *Leucapogon*, &c., to spread so far to the north-west, some of which, like *Tristania*, spread as far north as the Ava frontier. If all laterite plants were to be erased from a list of the plants of Pegu proper the flora would be rendered very uninteresting indeed."

The seasons of Pegu seem to be similar to those of Lower Bengal; the cold season, however, is shorter, and the hot, dry, as well as the rainy seasons, are earlier by a month than in Calcutta. The dry season ranges from about December to April, the cold part of which terminates usually, and sometimes, abruptly about the end of February; during this period the thermometer rarely rises above 88° in the shade, sinking as low as 57° and sometimes to 55° and 54° before sunrise. Heavy dews prevail and fogs are plentiful in the early hours of the day, the after parts of which are clear and bright. During this season rain is almost unknown. The hot part of the dry season comprises the months of March and April, during which time, chiefly in the former month, an occasional heavy thunderstorm moderates the intense heat. In the early part of May the regular monsoon rains, which cease during November, set in. The thermometer, during the hot season, rises rapidly to 95° and 100° in the shade. The nights, however, are cool and refreshing. In the hottest province of the country, at the height of the season, the thermometer never registered above 74° before sunrise. Great heat and dryness prevails in the open country, and on the ridges, "while in the narrow valleys of the eastern slopes of Yomah, and in the Martaban hills, where evergreen forests skirt the streams, dew often falls so heavily, that one becomes quite wet when marching in the early mornings through the herbage along their bank. But after an ascent of 100 or 200 feet, we meet with the same dryness again in the deciduous forests, as in the open lands. It is here that we can almost every morning observe a white sheet of vapour in the depths of the valleys, resting on the forests, which enables us to appreciate clearly the rôle which evergreen forests play in the attraction of the currents of vapour."

The foregoing abstracts will serve to show the nature of Mr. Kurz's report, a good deal of which is interesting. It might, however, have been considerably condensed without losing any of its value, indeed its value would have been much enhanced.

Whatever advantages or disadvantages Burmah may present to travellers generally, to a botanist the advantage must be very great in having specimens ready gathered, and only requiring to be picked up, for we are told that owing to the extreme violence of the gales which prevail at the end of April and the beginning of May, the amount of old trees, branches, &c., thrown down is often astounding, offering an easy and fruitful harvest of specimens of

woody plants, otherwise quite out of reach on account of their height. At other seasons apes and squirrels are most useful agents for procuring flowers and fruits of lofty trees. Another advantage is that in the cold season there is an absence of mosquitoes. Space will not allow us to do more than mention the appendices which we have before referred to. In the introduction to the first, which is a list of Burmese trees arranged in their natural orders, with brief remarks as to the quality and appearance of the wood, &c., we are treated to some remarks on the value or otherwise, of native names of plants. Mr. Kurz says, "there are still very respectable botanists and practical men who look upon native names for plants as something absolutely reliable, some even believe that native names are preferable to scientific ones, because the former are permanent, and are not altered from one day to another, as is the case in science." Our own experience is that while a native name, is often a great help to the accurate determination of the genus or species, it is, on the other hand, often a delusion and a snare, for it frequently occurs that the same name is applied indiscriminately to plants even of distinct natural orders. This, perhaps, is not so much the case with Indian plants as with plants from other countries. Mr. Kurz points out the difficulty that must always present itself in India, where the same plant is known in different localities by different names, whereas the scientific name would be identical all the world over, or if not actually identical, certainly traceable. This lengthy report concludes with some extracts from the author's journal of his tours. It is illustrated with a sketch map of Pegu, and two plates of a new genus *Mayodendron*, named in honour of Lord Mayo, and one of the appendices contains a botanical description of this plant.

INFLUENCE OF CLIMATE ON PULMONARY CONSUMPTION

Influence of Climate in the Prevention and Treatment of Pulmonary Consumption. Lettsomian Lectures for 1876. By Charles Theodore Williams, M.A., M.D., Oxon. (London: Smith, Elder, and Co., 1877.)

THE fact that consumption is the great destroyer of men and women in the prime of life, nearly one-eighth of all the deaths which occur being due to it, is more than sufficient to warrant any amount of minute and patient inquiry which might result in the prevention and more successful treatment of this terrible disease. Dr. Williams treats the subject in its climatic relations, and gives what is, in many directions, an elaborate and able discussion of a large amount of fresh data adduced with reference to the therapeutic action of British, Mediterranean, African, Indian, Australian, sea-voyage, and other climates, differing widely from each other as regards temperature, humidity, elevation, and exposure to sudden changes of weather. In concluding the inquiry he draws some valuable conclusions as to those patients who ought to winter abroad, and those on the other hand who may remain at home, those who are most likely to be benefited by sea-voyages, and those most benefited by dry climates, and how far the temperature and elevation is to be taken into account. The question of moist climates, whether hot or cold, is also